

Search Lib Browse Queue Door

DBs USPAT US:PGPUB:EPQ:JPO:DERW Plurals

Default operator: OR ☒ Highlight all in terms initially

(cameras with synthesi\$5) and (virtual\$3 same
(coordinat\$4 or point\$3 or position\$3))

1/9/04

[illegible]

Ready NUM

DOCUMENT-IDENTIFIER: US 20030085999 A1

TITLE: Vehicle surroundings monitoring system and method for adjusting the same

----- KWIC -----

Abstract Paragraph - ABTX (1):

The invention provides a vehicle surrounding synthesizing and displaying images captured by provide images that, near the border between p accurate and more readily understood by the user than h

	Document I	Kind Code	Source	Issue D	Pages
1	US 2003023		US-PGP	2003122	25
2	US 2003021		US-PGP	2003112	18
3	US 2003021		US-PGP	2003111	39
4	US 2003019		US-PGP	2003102	19
5	US 2003017		US-PGP	2003092	14
6	US 2003015		US-PGP	2003082	13
7	US 2003014		US-PGP	2003073	39
8	US 2003013		US-PGP	2003072	17
9	US 2003013		US-PGP	2003071	28
10	US 2003013		US-PGP	2003071	7
11	US 2003010		US-PGP	2003061	28
12	US 2003010		US-PGP	2003061	35
13	US 2003010		US-PGP	2003052	9
14	US 2003009		US-PGP	2003052	8
15	US 2003008		US-PGP	2003050	36
16	US 2003007		US-PGP	2003042	67
17	US 2003006		US-PGP	2003040	18
18	US 2003005		US-PGP	2003032	16



US 20030085999A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2003/0085999 A1
Okamoto et al. (43) Pub. Date: May 8, 2003

(54) VEHICLE SURROUNDINGS MONITORING SYSTEM AND METHOD FOR ADJUSTING THE SAME

(50) Foreign Application Priority Data

Oct. 15, 2001 (JP) 2001-315355

Publication Classification

(78) Inventors: Shinsaku Okamoto, Kanagawa (JP); Masamichi Nakagawa, Osaka (JP); Asumi Morioka, Nara (JP); Kazufumi Minamawa, Kanagawa (JP); Asumi Iwaki, Osaka (JP); Takashi Yoshida, Osaka (JP)

(51) Int. Cl. H04N 9/47
(52) U.S. Cl. 348/148

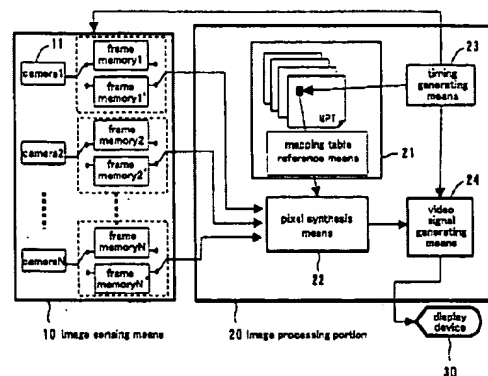
(57) ABSTRACT

The invention provides a vehicle surroundings monitoring system for synthesizing and displaying images captured by a plurality of cameras to provide images that, near the border between partial images, are more accurate and more readily understood by the user than has been the case conventionally. In the synthesized image, a partial image captured by a first camera and a partial image captured by a second camera are adjacent to one another at their border. Near this border, the capturing directions of the first and the second cameras both substantially match the direction of the border. Consequently, images of objects near the border extend along the border, and thus do not disappear on the synthesized image.

Correspondence Address:
HARNES, DICKEY & PIERCE, P.L.C.
P.O. BOX 818
BLOOMFIELD HILLS, MI 48303 (US)

(21) Appl. No.: 10/271,411

(22) Filed: Oct. 15, 2002



DOCUMENT-IDENTIFIER: US 20030058338 A1

TITLE: Method and apparatus for
signal processor

----- KWIC -----

Summary of Invention Paragraph - BSTX (6):

[0005] As an apparatus which applies an image inputted from plural cameras to reproduce a sense of distance, for example, a vehicle rear monitoring apparatus of Publication No. Hei 3 (1991)-99952. In this v

Details Text Image HTML KWIC

Document I	Kind	Code	Source	Issue	D	Pages
1	US	2003023	US-PGP	2003122	25	
2	US	2003021	US-PGP	2003112	18	
3	US	2003021	US-PGP	2003111	39	
4	US	2003019	US-PGP	2003102	19	
5	US	2003017	US-PGP	2003092	14	
6	US	2003015	US-PGP	2003082	13	
7	US	2003014	US-PGP	2003073	39	
8	US	2003013	US-PGP	2003072	17	
9	US	2003013	US-PGP	2003071	28	
10	US	2003013	US-PGP	2003071	7	
11	US	2003010	US-PGP	2003061	28	
12	US	2003010	US-PGP	2003061	35	
13	US	2003010	US-PGP	2003052	9	
14	US	2003009	US-PGP	2003052	8	
15	US	2003008	US-PGP	2003050	36	
16	US	2003007	US-PGP	2003042	67	
17	US	2003006	US-PGP	2003040	18	
18	US	2003005	US-PGP	2003032	16	

Details Text Image HTML



US 20030058338A1

(19) United States

(12) Patent Application Publication
Kawachi et al.

(10) Pub. No.: US 2003/0058338 A1
(13) Pub. Date: Mar. 27, 2003

(34) METHOD AND APPARATUS FOR
MONITORING VEHICLE REAR, AND
SIGNAL PROCESSOR

(30) Foreign Application Priority Data
Sep. 26, 2001 (JP) 2001-293520

(75) Inventors: Ryoji Kawachi, Tokyo (JP);
Hiroshi Iwano, Tokyo (JP); Noriyuki
Sato, Tokyo (JP); Taro Oishi, Tokyo
(JP)

(51) Int. Cl. H04N 7/18
(52) U.S. Cl. 348/148

ABSTRACT

Disclosed is a method for monitoring a vehicle rear which permits a user to grasp the position of the vehicle concerned easily without a sense of incongruity even in the case where plural display modes on a monitor are provided and switched from one to another.

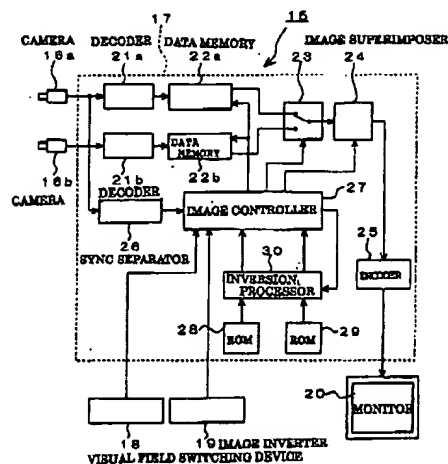
The vehicle rear monitoring method comprises displaying a vehicle on one side of a monitor and displaying a rear image of the vehicle on an opposite side of the monitor, and displaying the rear image of the vehicle on the one side of the monitor and switching from said one display to said other display on the monitor.

Correspondence Address:
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1111 PENNSYLVANIA AVENUE NW
WASHINGTON, DC 20004 (US)

(73) Assignee: Clarion Co., Ltd.

(21) Appl. No.: 10/253,526

(22) Filed: Sep. 25, 2002



Details Text Image HTML Full

DOCUMENT-IDENTIFIER: US 20030021490 A1
TITLE: Monitoring system

----- KWIC -----

Pre-Grant Publication Document Identifier - DI
US 20030021490 A1

Summary of Invention Paragraph - BSTX (2):
[0001] The present invention relates to an
generate a synthesized image by using camera i
of

	Document I	Kind Code	Source	Issue D	Page
4	US 2003019		US-PGP	2003102	19
5	US 2003017		US-PGP	2003092	14
6	US 2003015		US-PGP	2003082	13
7	US 2003014		US-PGP	2003073	39
8	US 2003013		US-PGP	2003072	17
9	US 2003013		US-PGP	2003071	28
10	US 2003013		US-PGP	2003071	7
11	US 2003010		US-PGP	2003061	28
12	US 2003010		US-PGP	2003061	35
13	US 2003010		US-PGP	2003052	9
14	US 2003009		US-PGP	2003052	8
15	US 2003008		US-PGP	2003050	36
16	US 2003007		US-PGP	2003042	67
17	US 2003006		US-PGP	2003040	18
18	US 2003005		US-PGP	2003032	16
19	US 2003003		US-PGP	2003022	12
20	US 2003002		US-PGP	2003020	19
21	US 2003002		US-PGP	2003013	34

(19) United States
(12) Patent Application Publication (10) Pub. No.: US 2003/0021490 A1
Okamoto et al. (c) Pub. Date: Jan. 30, 2003

(34) MONITORING SYSTEM (30) Foreign Application Priority Data
Jul. 19, 2000 (JP) 2000-219513

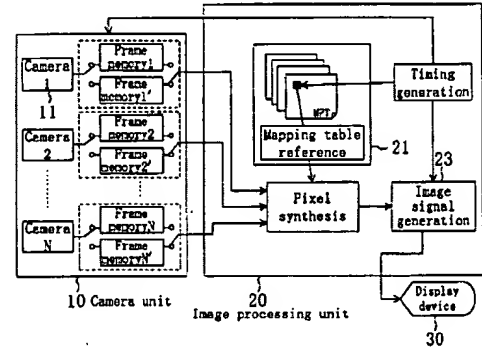
(76) Inventors: Shinsuke Okamoto, Osaka (JP);
Masamichi Nakagawa, Osaka (JP);
Kenji Nobori, Osaka (JP); Atsushi
Moriwaka, Nara (JP); Nobuhiko
Yasui, Osaka (JP); Akira Ishida, Osaka
(JP); Atsushi Dozaka, Osaka (JP);
Takeshi Yoshida, Osaka (JP)

Correspondence Address:
HARNES, DICKET & PIERCE, P.L.C.
P.O. BOX 218
BLOOMFIELD HILLS, MI 48303 (US)

(21) Appl. No.: 10/088,606
(22) PCT Filed: Jul. 19, 2001
(40) PCT No.: PCT/JP01/06313

Publication Classification
(51) Int. Cl. G06K 9/00, G06K 9/36
(52) U.S. Cl. 362/284, 362/104

(57) ABSTRACT
For supporting a complicated driving operation, a synthe-
sized image by using which a driver can drive with a sense
of security is presented to the driver. Camera images of
cameras installed on a vehicle are used so that an image with
a lateral visual field of 180 degrees in the rear of the vehicle
can be displayed in the form of a mirror image. Also, (a) the
loci (41) of the vehicle obtained by assuming a reverse
operation are overlapped with the image to be displayed.
Furthermore, (b) a far area (42) is enlarged to be displayed
in a sub-window (44), or (c) auxiliary lines (45, 46 and 47)
indicating distances from the vehicle are overlapped with the
image to be displayed.



DOCUMENT-IDENTIFIER: US 20030011597 A1

TITLE: Viewpoint converting apparatus and
vehicular image processing method utilizing the viewpoint converting apparatus and program

KWIC

Pre-Grant Publication Document Identifier - DI
US 20030011597 A1

Document I	Kind Code	Source	Issue D	Page
5	US 2003017	US-PGP	2003092	14
6	US 2003015	US-PGP	2003082	13
7	US 2003014	US-PGP	2003073	39
8	US 2003013	US-PGP	2003072	17
9	US 2003013	US-PGP	2003071	28
10	US 2003013	US-PGP	2003071	7
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12	US 2003010	US-PGP	2003061	35
13	US 2003010	US-PGP	2003052	9
14	US 2003009	US-PGP	2003052	8
15	US 2003008	US-PGP	2003050	36
16	US 2003007	US-PGP	2003042	67
17	US 2003006	US-PGP	2003040	18
18	US 2003005	US-PGP	2003032	16
19	US 2003003	US-PGP	2003022	12
20	US 2003002	US-PGP	2003020	19
21	US 2003002	US-PGP	2003013	34
22	US 2003001	US-PGP	2003011	18

(19) United States
(12) Patent Application Publication (19) Pub. No.: US 2003/0011597 A1
Otsumi (c) Pub. Date: Jan. 16, 2003

(54) VIEWPOINT CONVERTING APPARATUS, METHOD, AND PROGRAM AND VEHICULAR IMAGE PROCESSING APPARATUS AND METHOD UTILIZING THE VIEWPOINT CONVERTING APPARATUS, METHOD, AND PROGRAM

Publication Classification

(51) Int. Cl. G06T 15/20
(52) U.S. Cl. 348/427

(75) Inventor: Ken Otsumi, Tokyo (JP)

(57) ABSTRACT

Correspondence Address:
McDERMOTT, WILL & EMERY
602 13th Street, N.W.
Washington, DC 20005-3096 (US)

(73) Assignee: Nissan Motor Co., Ltd.

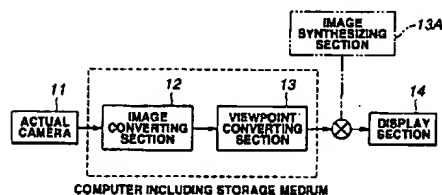
(21) Appl. No.: 10/193,284

(22) Filed: Jul. 12, 2002

(30) Foreign Application Priority Data

Jul. 12, 2001 (JP) 2001-211793
Mar. 22, 2002 (JP) 2002-080045

In viewpoint converting apparatus, method, and program, and vehicular image processing apparatus and method utilizing the view point converting apparatus, method, and program, an image conversion is performed for an image photographed by a photographing section with an angle of outgoing radiation of a light ray toward an internal of the photographing section set to be narrower than an angle of incidence of another light ray from an external to the photographing section and a viewpoint conversion is performed for the viewpoints converted image by an image converting section.



DOCUMENT-IDENTIFIER: US 20020196340 A1

TITLE: Image synthesis display
vehicle camera

----- KWIC -----

Abstract Paragraph - ABTX (1):

When multiple cameras (CAM1) to (CAM8) for local vehicle are mounted on the vehicle, and when c

synthesized to display a synthesized image on (16), the pixel data for the camera images cor

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Document I	Kind	Code	Source	Issue	D	Pages
7	US	2003014	US-PGP	2003073	39	
8	US	2003013	US-PGP	2003072	17	
9	US	2003013	US-PGP	2003071	28	
10	US	2003013	US-PGP	2003071	7	
11	US	2003010	US-PGP	2003061	28	
12	US	2003010	US-PGP	2003061	35	
13	US	2003010	US-PGP	2003052	9	
14	US	2003009	US-PGP	2003052	8	
15	US	2003008	US-PGP	2003050	36	
16	US	2003007	US-PGP	2003042	67	
17	US	2003006	US-PGP	2003040	18	
18	US	2003005	US-PGP	2003032	16	
19	US	2003003	US-PGP	2003022	12	
20	US	2003002	US-PGP	2003020	19	
21	US	2003002	US-PGP	2003013	34	
22	US	2003001	US-PGP	2003011	18	
23	US	2003000	US-PGP	2003010	16	
24	US	2002019	US-PGP	2002122	14	



US 20020196340A1

(18) United States

(12) Patent Application Publication (10) Pub. No.: US 2002/0196340 A1
Kato et al. (43) Pub. Date: Dec. 26, 2002(34) IMAGE SYNTHESIS DISPLAY METHOD
AND APPARATUS FOR VEHICLE CAMERA

(30) Foreign Application Priority Data

Apr. 24, 2001 (JP) P. 2001-125013

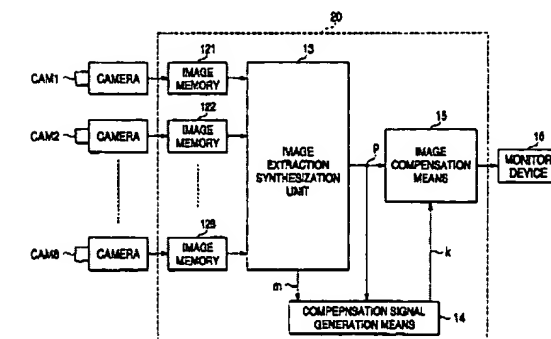
(73) Inventors: Koichi Kato, Hamamatsu-shi (JP);
Masato Suzuki, Hamamatsu-shi (JP);
Yuko Fujita, Katsuyuki-shi (JP);
Yukio Hiruma, Yokohama-shi (JP)

Publication Classification

(51) Int. Cl. H04N 7/18; H04N 9/47
(52) U.S. Cl. 348/148; 348/584; 382/104

(57) ABSTRACT

When multiple cameras (CAM1) to (CAM8) for shooting the periphery of a local vehicle are mounted on the vehicle, and when obtained camera images are to be synthesized to display a synthesized image on the screen of a display device (16), the pixel data for the camera images constituting the synthesized image are compensated for, so that differences in the pixel data for adjacent camera images is reduced. For example, the pixel data are corrected so their values equal the average values of the pixel data for the adjacent camera images. Therefore, an easily viewed image, produced by synthesizing the images obtained by the multiple vehicle cameras, can be displayed on the monitor device (16).



Full

DOCUMENT-IDENTIFIER: US 20020191078 A1
TITLE: Monitoring system

----- KWIC -----

Pre-Grant Publication Document Identifier - DI
US 20020191078 A1

Detail Description Paragraph - DETX (3):
[0031] FIG. 1 is a block diagram for showing
monitoring
system of this invention. In the monitoring s

	Document I	Kind Code	Source	Issue D	Pages
9	US 2003013		US-PGP	2003071	28
10	US 2003013		US-PGP	2003071	7
11	US 2003010		US-PGP	2003061	28
12	US 2003010		US-PGP	2003061	35
13	US 2003010		US-PGP	2003052	9
14	US 2003009		US-PGP	2003052	8
15	US 2003008		US-PGP	2003050	36
16	US 2003007		US-PGP	2003042	67
17	US 2003006		US-PGP	2003040	18
18	US 2003005		US-PGP	2003032	16
19	US 2003003		US-PGP	2003022	12
20	US 2003002		US-PGP	2003020	19
21	US 2003002		US-PGP	2003013	34
22	US 2003001		US-PGP	2003011	18
23	US 2003000		US-PGP	2003010	16
24	US 2002019		US-PGP	2002122	14
25	US 2002019		US-PGP	2002121	13
26	US 2002019		US-PGP	2002121	17

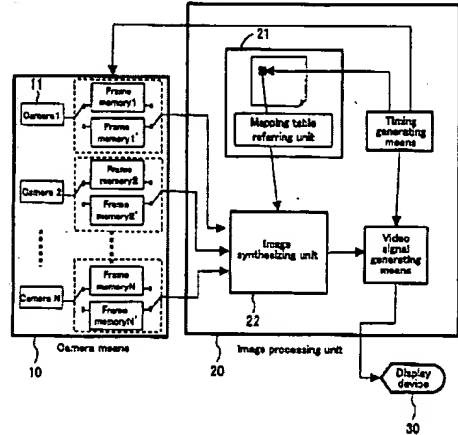


(19) United States
(12) Patent Application Publication (10) Pub. No.: US 2002/0191078 A1
Okamoto et al. (43) Pub. Date: Dec. 19, 2002

(54) MONITORING SYSTEM
(76) Inventors: Shunroku Okamoto, Kanagawa (JP); Masamichi Nakagawa, Osaka (JP); Takeshi Yoshida, Osaka (JP); Atsushi Inaka, Osaka (JP); Atsushi Morimura, Nara (JP)
(51) Int. Cl. H04N 7/18
(52) U.S. Cl. 348/148
(57) ABSTRACT

Correspondence Address:
HARNES, DICKEY & PIERCE, P.L.C.
P.O. BOX 828
BLOOMFIELD HILLS, MI 48303 (US)
(21) Appl. No.: 10/173,316
(22) Filed: Jun. 17, 2002
(30) Foreign Application Priority Data
Jun. 18, 2001 (JP) 2001-182,741

A camera for taking a state behind a vehicle is installed in a position laterally shifted from the rear center of the vehicle. An image processing unit generates a rear image from a camera image by shifting exactly a rectangular area of the camera image so that a vertical center line thereof can substantially accord with the center line along the lengthwise direction of the vehicle. Furthermore, processing for correcting lens distortion may be performed. As a result, when the vehicle is moved straight backward, an object present on the center line of the vehicle moves vertically in substantially the center of the screen, so that a user can be prevented from having an odd feeling to see the image.



DOCUMENT-IDENTIFIER: US 20020149673 A1

TITLE: Image display method and system

----- KWIC -----

Pre-Grant Publication Document Identifier - DI
US 20020149673 A1Detail Description Paragraph - DETX (3):
[0034] FIG. 1 shows a relation between a ve
camera

	Document I	Kind Code	Source	Issue D	Page
11	US 2003010		US-PGP	2003061	28
12	US 2003010		US-PGP	2003061	35
13	US 2003010		US-PGP	2003052	9
14	US 2003009		US-PGP	2003052	8
15	US 2003008		US-PGP	2003050	36
16	US 2003007		US-PGP	2003042	67
17	US 2003006		US-PGP	2003040	18
18	US 2003005		US-PGP	2003032	16
19	US 2003003		US-PGP	2003022	12
20	US 2003002		US-PGP	2003020	19
21	US 2003002		US-PGP	2003013	34
22	US 2003001		US-PGP	2003011	18
23	US 2003000		US-PGP	2003010	16
24	US 2002019		US-PGP	2002122	14
25	US 2002019		US-PGP	2002121	13
26	US 2002019		US-PGP	2002121	17
27	US 2002017		US-PGP	2002112	11
28	US 2002014		US-PGP	2002101	17

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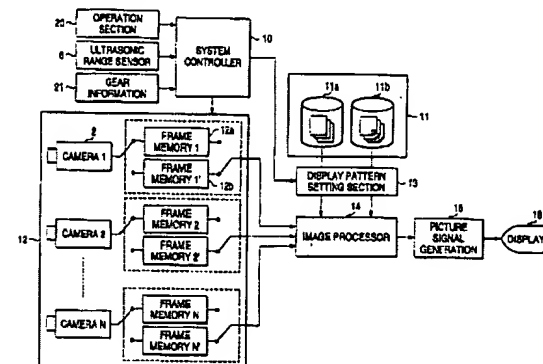
(19) United States
(12) Patent Application Publication (10) Pub. No.: US 2002/0149673 A1
Hirama et al. (9) Pub. Date: Oct. 17, 2002(54) IMAGE DISPLAY METHOD AND
APPARATUS FOR REARVIEW SYSTEM(50) Foreign Application Priority Data
Mar. 19, 2001 (JP) P. 2001-095360
Mar. 19, 2002 (JP) P. 2002-076467(75) Inventors: Yuichi Hirama, Yokohama-shi (JP);
Satoru Masuda, Yokohama-shi (JP);
Hidetoshi Mimura, Yokohama-shi (JP);
Kazuo Miyama, Yokohama-shi (JP);
Masahiro Takata, Zama-shi (JP)Publication Classification
(51) Int. Cl. B60N 7/18
(52) U.S. Cl. 348/118; 348/139; 348/140Correspondence Address:
PEARNE & GORDON LLP
526 SUPERIOR AVENUE EAST
SUITE 1200
CLEVELAND, OH 44114-1484 (US)(73) Assignee: Matsushita Electric Industrial Co.,
Ltd.

(21) Appl. No.: 10/109,375

(22) Filed: Mar. 28, 2002

ABSTRACT

An image display method for a rearview camera for displaying an image shot by a rearview camera mounted on a vehicle on a screen that can be viewed from a driver's seat, the method includes the step of displaying an auxiliary line image indicating the straight rear direction of the vehicle superimposed on the image shot by the vehicle on the screen. When the vehicle has approached the trailer within a predetermined range, an image from the rearview camera is converted to an image from a virtual overhead viewpoint then displayed on the screen. The driver easily back the vehicle to bring the hitch in the blind spot at the rear of the vehicle to coincide with a coupling member on the trailer while watching the screen display.



Details Text Image HTML Full

DOCUMENT-IDENTIFIER: US 20020094110 A1
TITLE: Driving assistance app

----- KWIC -----

Abstract Paragraph - ABTX (1):
A driving assistance apparatus includes: ca
observing point converting unit; an image synt
image information supplied from this virtual c

an obstacle sensing unit such as an ultrasonic
millimeter-wave radar; a safety area predicti
superposing unit. Then, the safety area predi

	Document I	Kind Code	Source	Issue D	Pages
14	US 2003009		US-PGP	2003052	8
15	US 2003008		US-PGP	2003050	36
16	US 2003007		US-PGP	2003042	67
17	US 2003006		US-PGP	2003040	18
18	US 2003005		US-PGP	2003032	16
19	US 2003003		US-PGP	2003022	12
20	US 2003002		US-PGP	2003020	19
21	US 2003002		US-PGP	2003013	34
22	US 2003001		US-PGP	2003011	18
23	US 2003000		US-PGP	2003010	16
24	US 2002019		US-PGP	2002122	14
25	US 2002019		US-PGP	2002121	13
26	US 2002019		US-PGP	2002121	17
27	US 2002017		US-PGP	2002112	11
28	US 2002014		US-PGP	2002101	17
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30	US 2002011		US-PGP	2002081	40
31	US 2002009		US-PGP	2002071	15

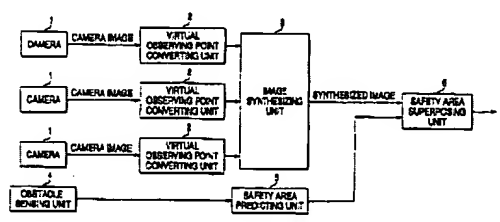
(10) United States
(12) Patent Application Publication (10) Pub. No.: US 2002/0094110 A1
Okada et al. (10) Pub. Date: Jul. 18, 2002

(54) DRIVING ASSISTANCE APPARATUS (52) U.S. Cl. 362/104; 348/113; 362/103; 362/284
(70) Inventors: Tetsuaki Okada, Yoshitaka-ichi (JP); Kazufumi Mizusawa, Kawasaki-shi (JP)

Correspondence Address:
PEARNE & GORDON LLP
536 SUPERIOR AVENUE EAST
SUITE 1200
CLEVELAND, OH 44114-1484 (US)

(21) Appl. No.: 09/993,727
(22) Filed: Nov. 6, 2001
(30) Foreign Application Priority Data
May 9, 2000 (JP) P. 2000-136044
Publication Classification
(51) Int. Cl. G06K 8/00

(57) ABSTRACT
A driving assistance apparatus includes: cameras a plurality of virtual observing points converting unit; an image synthesizing unit for synthesizing image information supplied from this virtual observing point converting unit; an obstacle sensing unit such as an ultrasonic-wave sensor and a millimeter-wave radar; a safety area predicting unit; and a safety area superposing unit. Then, the safety area predicting unit predicts such a safety area where an obstacle is not present based upon both a distance "d1" and an approximate direction, which are obtained from the obstacle sensing unit. Also, the safety area superposing unit superposes the safety area predicted by the safety area predicting unit on an image synthesized by way of cameras to display the synthesized image superposed with the safety area.



DOCUMENT-IDENTIFIER: US 20020005779 A1
TITLE: Driving operation assi

----- KWIC -----

Pre-Grant Publication Document Identifier - DI
US 20020005779 A1

Summary of Invention Paragraph - BSTX (21):
[0019] It is preferred that the image proce
surrounding condition image by synthesizing in

	Document I	Kind Code	Source	Issue D	Pages
19	US 2003003		US-PGP	2003022	12
20	US 2003002		US-PGP	2003020	19
21	US 2003002		US-PGP	2003013	34
22	US 2003001		US-PGP	2003011	18
23	US 2003000		US-PGP	2003010	16
24	US 2002019		US-PGP	2002122	14
25	US 2002019		US-PGP	2002121	13
26	US 2002019		US-PGP	2002121	17
27	US 2002017		US-PGP	2002112	11
28	US 2002014		US-PGP	2002101	17
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32	US 2002008		US-PGP	2002070	31
33	US 2002006		US-PGP	2002052	18
34	US 2002004		US-PGP	2002042	98
35	US 2002003		US-PGP	2002032	32
36	US 2002000		US-PGP	2002011	32



(15) United States
(12) Patent Application Publication (15) Pub. No.: US 2002/0005779 A1
Ishii et al. (43) Pub. Date: Jan. 17, 2002

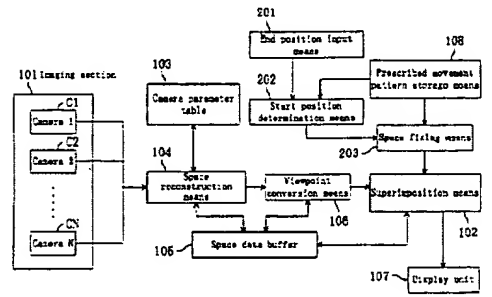
(54) DRIVING OPERATION ASSISTING METHOD
AND SYSTEM
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(22) Filed: Apr. 5, 2001
(30) Foreign Application Priority Data
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(57) ABSTRACT
In a driving operation assisting technique, the burden on a
user is reduced. The user is allowed to specify, on an image
representing the surrounding conditions around a vehicle,
the end position of the vehicle at the end of a predetermined
driving operation by using, for example, a pointer. A driving
operation assisting system obtains the start position of the
driving operation based on a prescribed movement pattern
representing the movement of the vehicle in the driving
operation, and superimposes the end position on the display
image.



DOCUMENT-IDENTIFIER: US 20010012985 A1
TITLE: Calibration system, ta
method

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Pre-Grant Publication Document Identifier - D
US 20010012985 A1

Summary of Invention Paragraph - BSTX (4):
[0003] FIG. 23 is a block diagram showing t
vehicle surrounding monitoring system (Japanes

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	Document I	Kind Code	Source	Issue D	Pages
23	US 2003000		US-PGP	2003010	16
24	US 2002019		US-PGP	2002122	14
25	US 2002019		US-PGP	2002121	13
26	US 2002019		US-PGP	2002121	17
27	US 2002017		US-PGP	2002112	11
28	US 2002014		US-PGP	2002101	17
29	US 2002012		US-PGP	2002090	30
30	US 2002011		US-PGP	2002081	40
31	US 2002009		US-PGP	2002071	15
32	US 2002008		US-PGP	2002070	31
33	US 2002006		US-PGP	2002052	18
34	US 2002004		US-PGP	2002042	98
35	US 2002003		US-PGP	2002032	32
36	US 2002000		US-PGP	2002011	32
37	US 2002000		US-PGP	2002010	32
38	US 2001004		US-PGP	2001112	19
39	US 2001002		US-PGP	2001092	12
40	US 2001001		US-PGP	2001080	32

Details Text Image HTML



(19) United States
(12) Patent Application Publication (10) Pub. No.: US 2001/0012985 A1
Okamoto et al. (3) Pub. Date: Aug. 9, 2001

(34) CALIBRATION SYSTEM, TARGET APPARATUS AND CALIBRATION METHOD (30) Foreign Application Priority Data
Jan. 27, 2000 (JP) 2000-075400

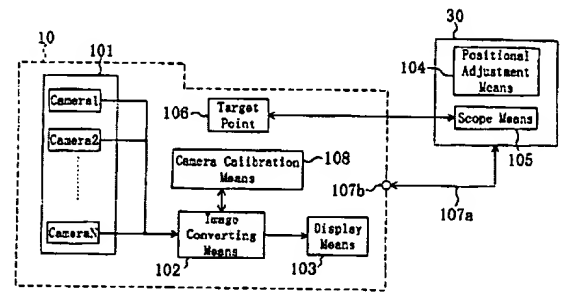
(76) Inventors: Shinsuke Okamoto, Osaka (JP); Masamichi Nakagawa, Osaka (JP); Atsushi Morimura, Nara (JP)

Correspondence Address: Harries, Dickey & Pierce, P.L.C. P.O. Box 829 Bloomfield Hills, MI 48303 (US)

(11) Appl. No.: 09/770,038
(22) Filed: Jan. 25, 2001

(51) Int. Cl. G01C 17/38
(52) U.S. Cl. 702/94; 702/95

(37) ABSTRACT
Simple calibration of a camera mounted on a mobile object is implemented. With a joint means, a target apparatus for calibration is physically fixed to the mobile object having a camera mounted thereon. The positional relation between the vehicle and the target apparatus is finely adjusted while visually confirming a target point on the vehicle through a scope means.



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	U	1	Document-I	Issue Da	Page	Title	Current O	Current XR	Retrieval	Inventor	S	C	P	2	8	
1			US 2003061922	20030619	21	Method and apparatus for	375/240.12	375/240.25		Chen, Sherman						
2			US 2002121918	20021219	18	Video data CODEC system	375/240.12	375/240.15;		Lee, Jae-Beom et al.						
3			US 2002112129	20021121	9	Method for decompressing	704/500			Ojanpera, Juha						
4			US 6476805	20021105	73	Techniques for spatial	345/420	345/426		Shum, Heung-Yeung						
5			US 5748242	19980505	9	Color video vector	348/391.1	375/240.12;		Podilchuk, Christine						
6			US 5710863	19980120	13	Speech signal quantization	704/200.1	704/219;		Chen, Juin-Hwey						